



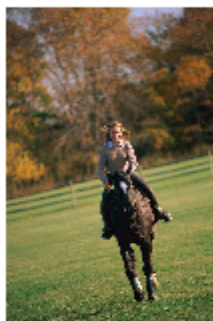
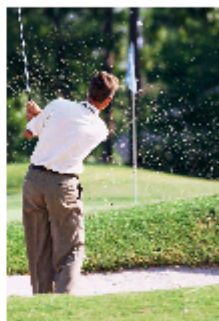
# **DMSO: Supporting the Warfighter**

**COL Ken Pieper  
Deputy Director, DMSO**

**27 February 2002**

## DMSO.com

All DMSO is 99% Purity



DMSO has been used for over 100 years in the United States. It is a natural substance derived from wood pulp and is harmless when used with the proper precautions. It is sold as a solvent. DMSO is an amazing substance that has many uses throughout the world.



[Material Safety Data Sheet](#)


Last Updated: 02/21/02 kp





# WWW.DMSO.MIL





United States Department of Defense  
**Defense Modeling and Simulation Office**

WEDNESDAY, 20 FEB 2002

SEARCH CONTACT US PRIVACY & SECURITY NOTICE

DoD M&S MANAGEMENT

WHAT'S NEW

- Announcements
- M&S Calendar
- M&S News e-Clips
- DMSO News Online

WARFIGHTER AREAS

- Asymmetric Warfare
- Joint Programs
- Transformation

TECHNOLOGY THRUSTS

- C4I to Sim
- Dynamic Environment
- Human Performance
- Knowledge Integration

TECH TRANSITION


- FDMS
- HLA / RTI
- MEL / ESG
- SEDRIS
- VV&A

RESOURCES

- MSIAC
- MSRR
- Online M&S Glossary
- DoD M&S Links
- Mailing Lists
- Document Library

COMMUNITY

- M&S University
- M&S Awards
- Executive Forum




*"...fostering the **interoperability**,  
**reuse**, and **affordability** of M&S  
and the **responsive** application  
of these tools..."*

The Defense Modeling and Simulation Office (DMSO) is the catalyst organization for Department of Defense (DoD) modeling and simulation (M&S) and ensures that M&S technology development is consistent with other related initiatives.

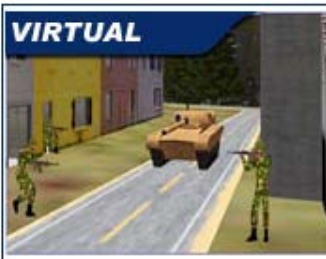
The DMSO performs those key corporate level functions necessary to encourage cooperation, synergism, and cost-effectiveness among the M&S activities of the DoD Components. The DMSO supports the warfighter by leading a defense-wide team in fostering the **interoperability**, **reuse**, and **affordability** of M&S and the **responsive** application of these tools to provide revolutionary warfighting capabilities and improve aspects of DoD operations.

- » [DoD M&S Vision](#)
- » [DoD M&S Management](#)
- » [DoD M&S Policy](#)
- » [DMSO Role & Responsibilities](#)
- » [DMSO Evolution](#)
- » [DMSO Current Thrusts](#)
- » [DMSO Organization](#)


**LIVE**



**VIRTUAL**



**CONSTRUCTIVE**



Questions or comments about this website? [DMSO Webmaster](#)





# The Modeling & Simulation Community



## Army

- **AMSO**
- STRICOM
- Battle Labs
- S&T Labs

## Air Force

- **XOC**
- AFAMS
- Battle Labs
- S&T Labs

## Marines

- **MCCDC**
- OSI
- S&T Labs

## Navy

- **NAVMSMO**
- NAWC-TSD
- S&T Labs

## Other Government Dept's/Labs

LABOR-DoT-DoE-DoJ  
NIST    FAA    NSF    NASA  
Argon    Santa Fe Institute  
Los Alamos    Sandia

## Other OSD Agencies

NIMA  
DTRA  
MDA  
DISA  
DARPA

## Programs

JSIMS  
JWARS  
JMASS

## Academia

C-Mellon  
MIT  
USC  
VMASC – ODU  
JHU-APL  
UCF

## Intel Community

## International

NATO

TTCP



## Industry

## DUSD (S&T) Directorates

## Prof'l Assn's

NDIA/NTSA  
MORS  
ITEA  
AFCEA  
AUSA  
AFA  
NCS  
Navy League

## FFRDCs

MITRE  
IDA

## Service Colleges

National Defense University  
Army War College  
Navy War College  
Air War College  
USMC War College  
DAU  
Service Academies

## Service Wargaming Centers

### Army

National Sim Center  
National Training Center  
Combat Maneuver Training Center  
Joint Readiness Training Center  
I,III,V,XVIII Corps Sim Ctrs  
KFBC

### Navy

NWDC  
TACTRAGRULANT  
TACTRAGRUPAC  
Strike U.  
TACTS Ranges

### Air Force

Warrior Prep Center  
Air Wargaming Institute  
Red/Green/Blue Flag  
National Test Facility

### Marine Corps

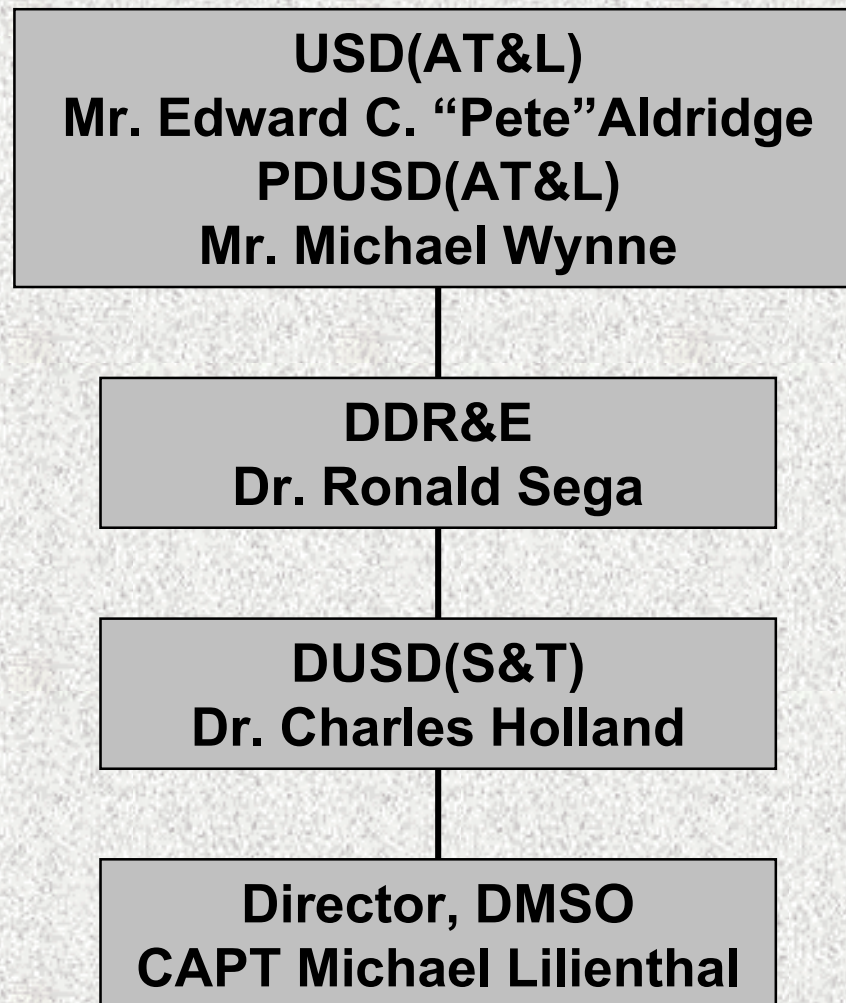
MCCDC  
Littoral Warfare Center

## JOINT

USJFCOM  
USPACOM  
USEUCOM  
USSOCOM  
USCENTCOM  
USSOUTHCOM  
USTRANSCOM  
USSPACECOM  
USSTRATCOM  
US Elem NORAD



# USD(AT&L)







# DoD Mission Environment



## Transformation



**MOOTW**



**Information  
Security**



**Weapons  
Proliferation**

**International  
Drug Trade**

***Constrained  
Resources***

***Increased  
Requirements***

***National Military  
Strategy***



**Major Theater  
Warfare**



**Effects-Based  
Operations**

**Weapons of  
Mass Destruction**

**Network-Centric  
Warfare**

**Asymmetric Threats**



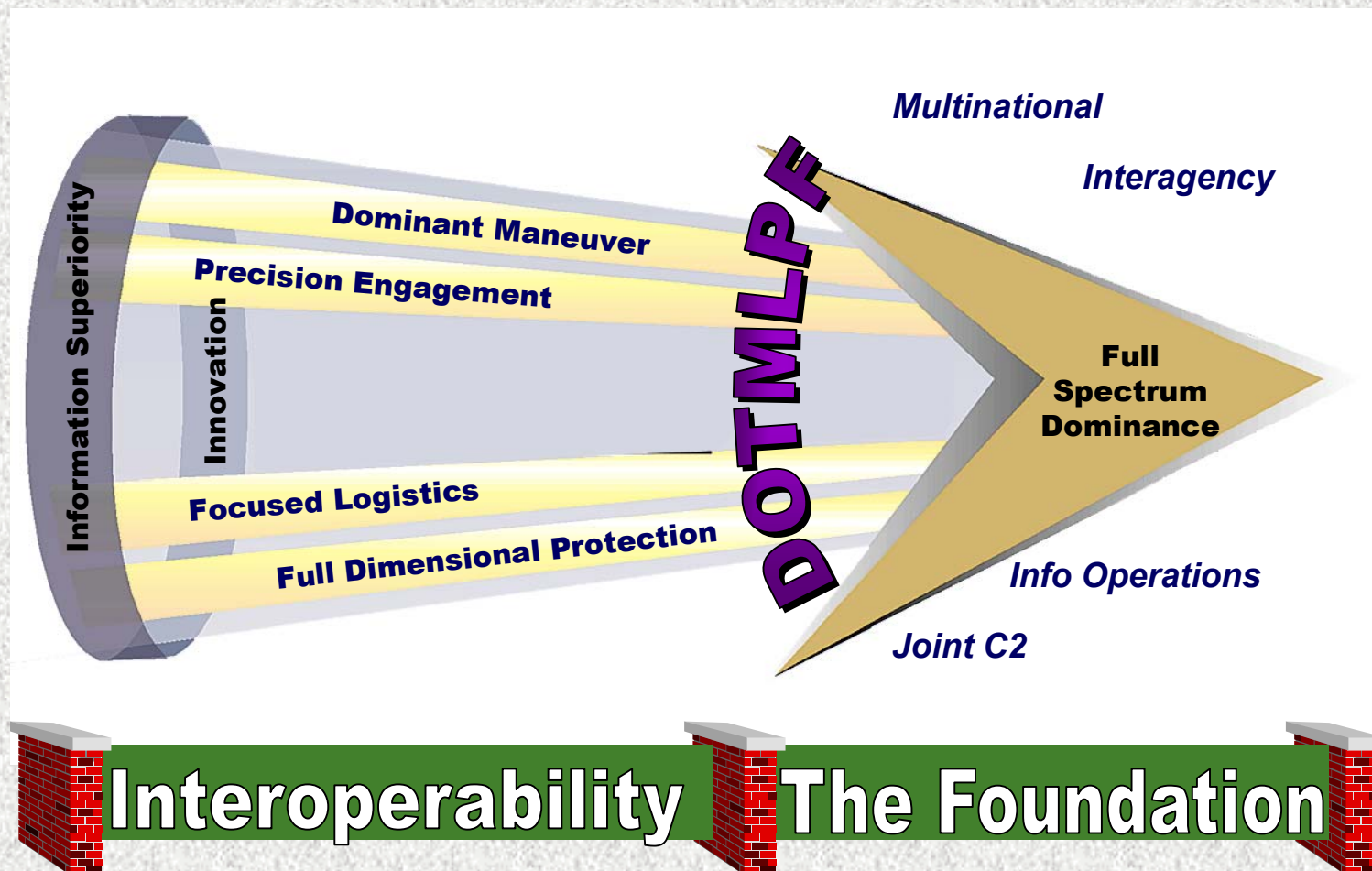
**FORCE STRUCTURE - READINESS - SUSTAINABILITY - MODERNIZATION**



# Joint Vision 2020



**M&S PLAYS A KEY ROLE AS AN ENABLING TECHNOLOGY**



Dedicated individuals and innovative organizations transforming the joint force for the 21st Century to achieve **full spectrum dominance** :

- persuasive in peace
- decisive in war
- preeminent in any form of conflict





# DoD Transformational Goals

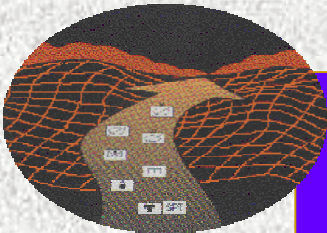


- Protect the U.S. homeland and our bases overseas;
- Project and sustain power in distant theaters;
- Deny our enemies sanctuary-making sure they know no corner of the world is remote enough, no mountain high enough, no cave or bunker deep enough, no SUV fast enough, to protect them from our reach;
- Protect our information networks from attack;
- Use information technology to link up different kinds of U.S. forces so they can fight jointly;
- Maintain unhindered access to space-and protect our space capabilities from enemy attack.

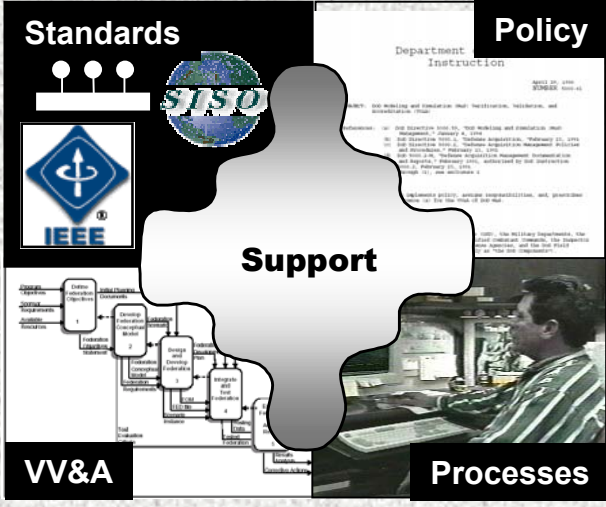
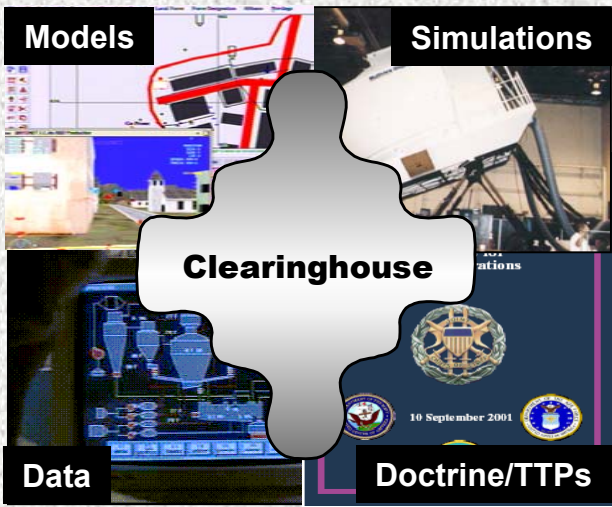
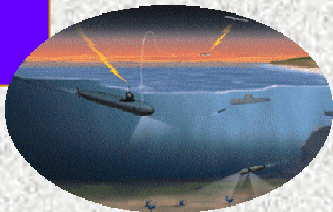




# The Transformation Process - Modeling and Simulation as a Key Enabler



*“A new generation of models and simulations will be needed to support distributed training; robust and continuous experimentation; and operational planning, execution, and assessment tools.” – Transformation Study Report, Executive Summary, 27 April 2001.*







# Key to Effective Transformation



**Threat Based**

**To**

**Capabilities Based**



## Agile Response to Asymmetric Warfare

- Multi-national, dispersed enemy
- Unconventional weapons
- Working with civil infrastructure
- Coalition operations
- Civil/military operations



## **Required:**

Changes in Culture

Change conceptual framework for decision making

Management Initiatives

Incentivize changes in process

Technological Innovation

Dramatic improvement in tools, models, simulations





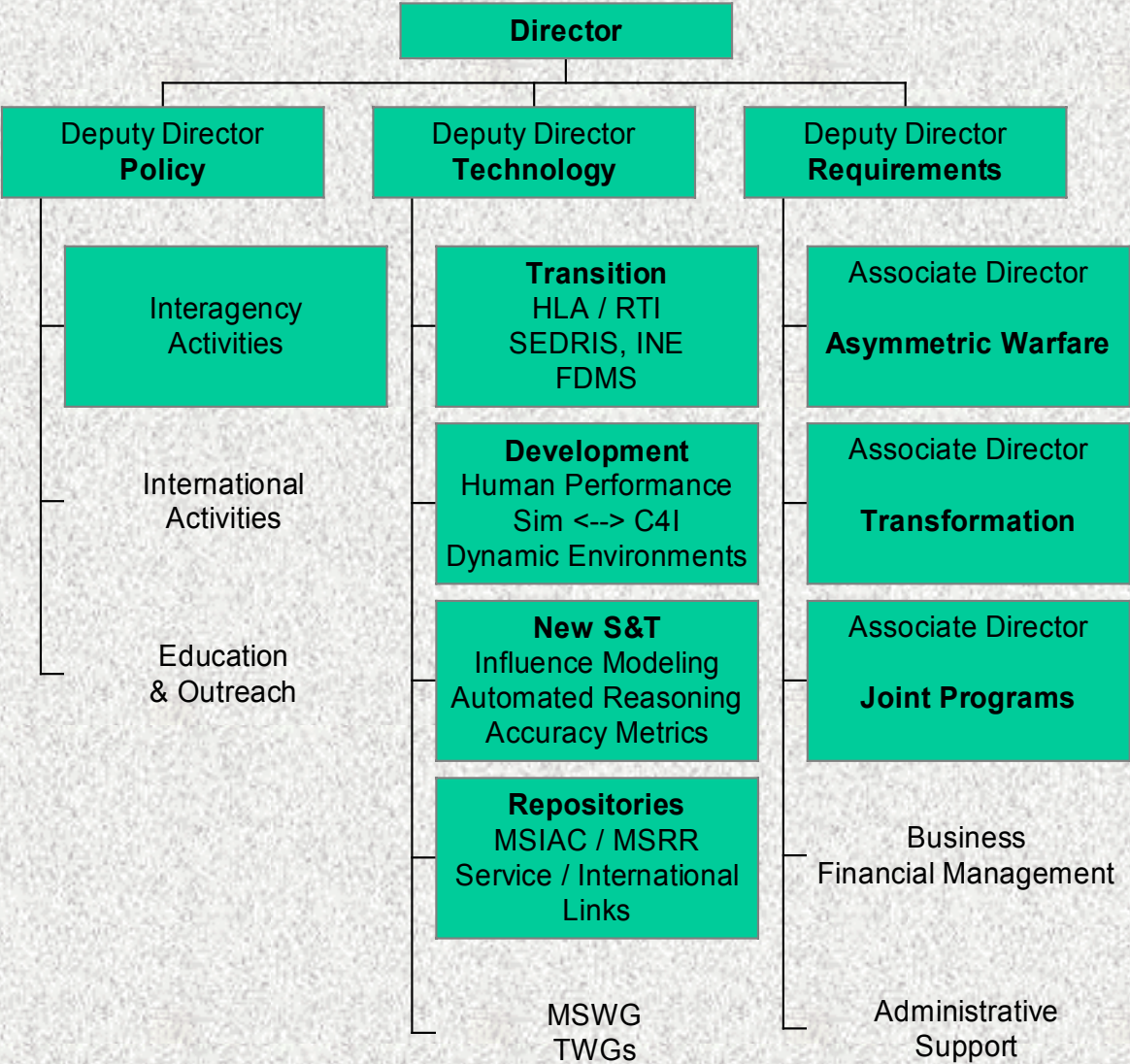
# DoD Modeling and Simulation Vision



To provide readily-available operationally valid M&S capabilities for use by DoD components to train jointly, develop doctrine and tactics, formulate operational plans, and assess war fighting situations.



# DMSO Organization







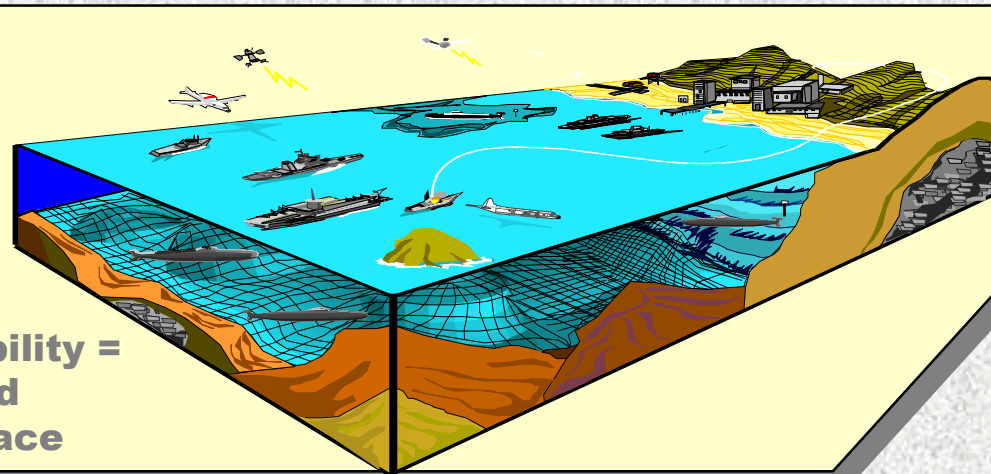
# Program Schedule



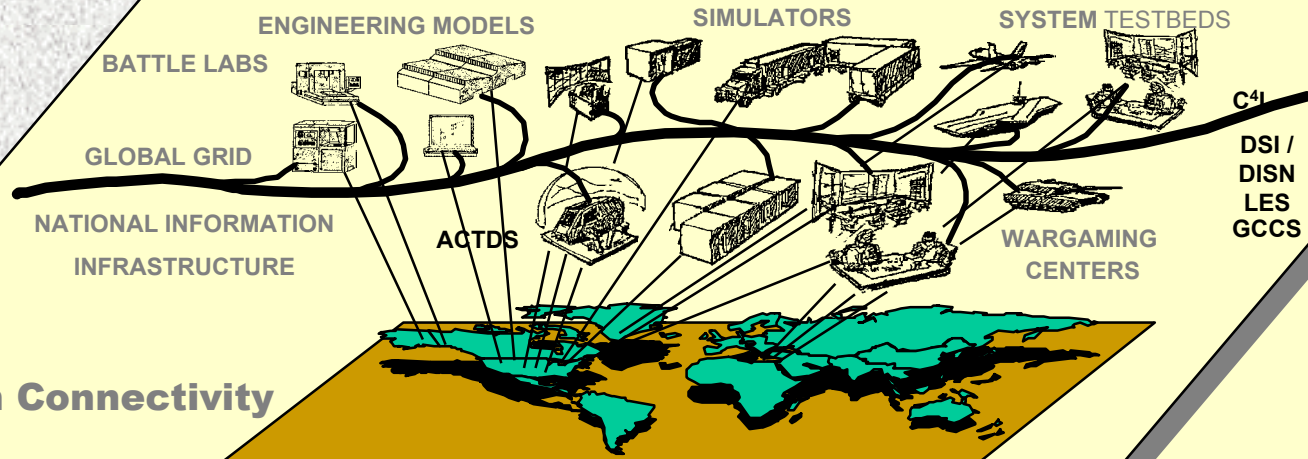
- **Modeling and simulation recognized as a key enabler to the Transformation of DoD**
  - Jan 03 Develop process, using M&S for sensitivity analyses, for acquisition decisions
  - Jan 03 Establish a basic research plan for the science of modeling and simulation
  - Jan 05+ JSB, JVB, FBE interoperate in a seamless synthetic battlespace
- **Meet warfighter needs through modeling and simulation**
  - Sep 02 Demonstrate interoperability of multi-fidelity models
  - Jan 03 Facilitate OOTW missions through M&S
  - Jan 03 Deliver authoritative synthetic natural environments to JWARS
  - Jan 03+ Standardize common environmental server use for synthetic environments
- **Enable effective Joint Training, (live, virtual, constructive) in urban terrain**
  - Oct 03 Link urban operations facilities, virtual simulators and constructive models; demonstrate joint training capability
  - Oct 04+ Add sites and capabilities
- **Enable agile, cost-effective training, planning, and acquisition through the development and promulgation of policy and standards**
  - Jan 03 Publish Revised Modeling and Simulation Master Plan
  - Jan 03 SEDRIS moved to ISO Standards process
  - Jan 05 Full SEDRIS accepted as ISO Standard

# “Simulated Mission Space”

**Desired Capability =  
Simulated  
Mission Space**



**Comm Connectivity**



- POLICY & DIRECTIVES
- COMMON TECHNICAL FRAMEWORKS
- PROTOCOLS & STANDARDS
- COMMON REPRESENTATIONS
- COMMON SERVICES
- CONFORMANCE

**Interoperability & Reuse**





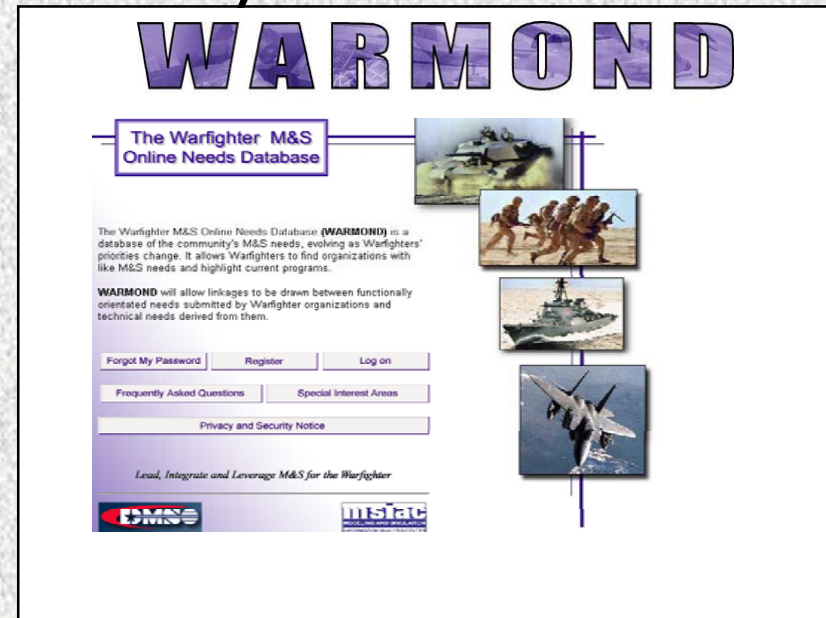
# The Warfighter M&S Online Needs Database (WARMOND)



## WARMOND

Provides the automated means for updating, viewing, and retrieving information on M&S needs

- A database of the community's M&S Needs
- Identify End-User M&S Needs
- Document M&S Needs
- Integrate into existing projects and programs



<http://warfighter.msiac.dmsso.mil>

### Registration:

Joe Hayes  
[jhayes@msiac.dmsso.mil](mailto:jhayes@msiac.dmsso.mil)  
(703) 933-3375

### Content Managers:

Terry Moss  
[tmoss@msiac.dmsso.mil](mailto:tmoss@msiac.dmsso.mil)  
(703) 933-3329

Jim Quinlan  
[jquinlan@msiac.dmsso.mil](mailto:jquinlan@msiac.dmsso.mil)  
(703) 933-3379

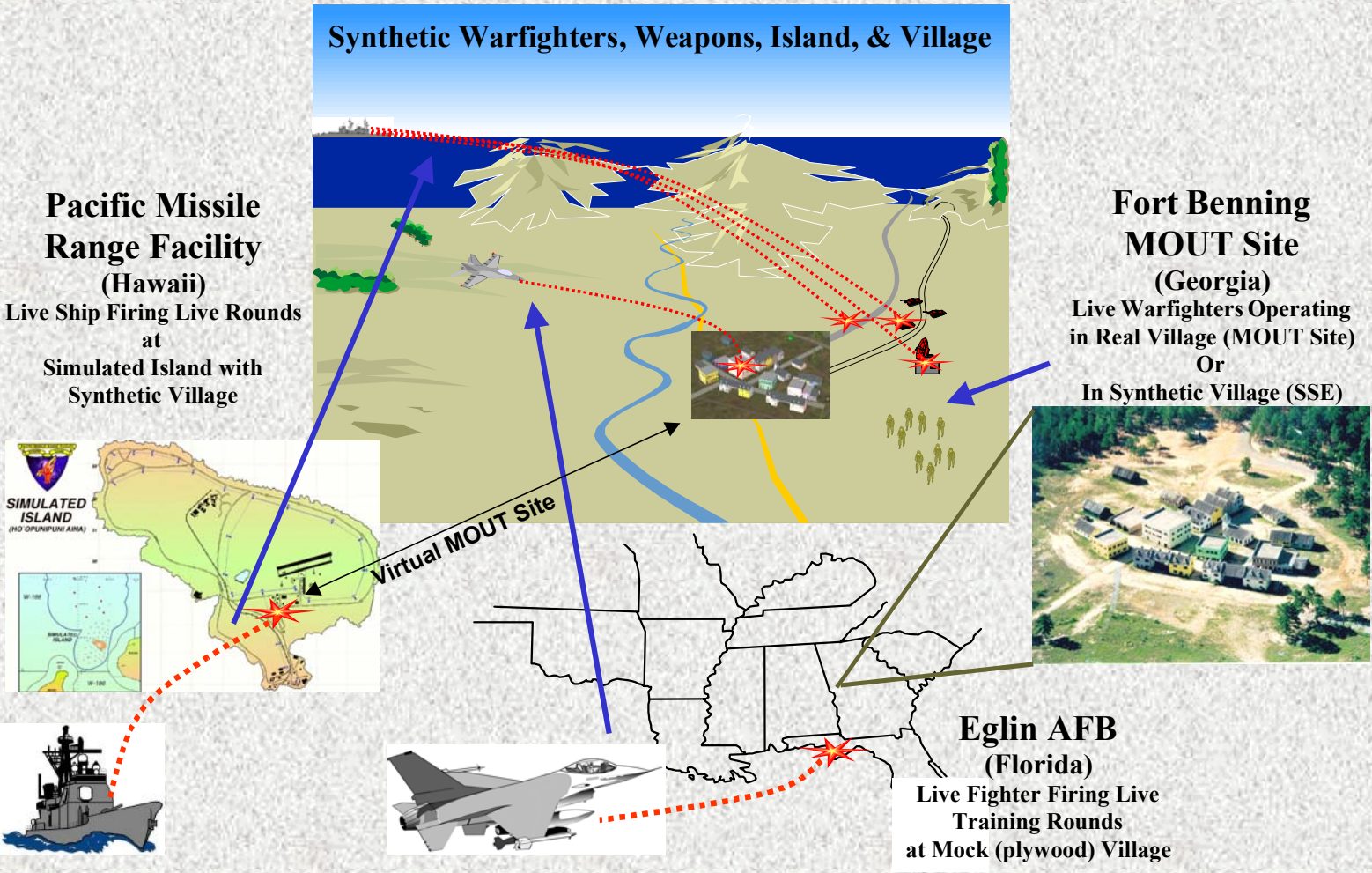
### Military POC:

LtCol Chris Hadinger USMC  
[hadinger@dmsso.mil](mailto:hadinger@dmsso.mil)  
(703) 998-0660



# The DMSO Role: Example

## Integrated Live/Virtual Joint Urban Operations Range





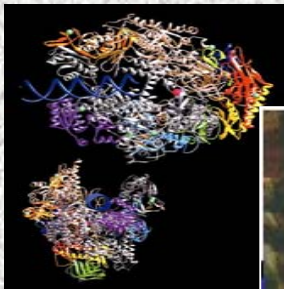


# Asymmetric Warfare



- *Predict human behavior*
- *Develop M&S decision support / course of action analysis tools*
- *Leverage Inter-Agency M&S in Homeland Security*

*Understand unconventional threats and environments*



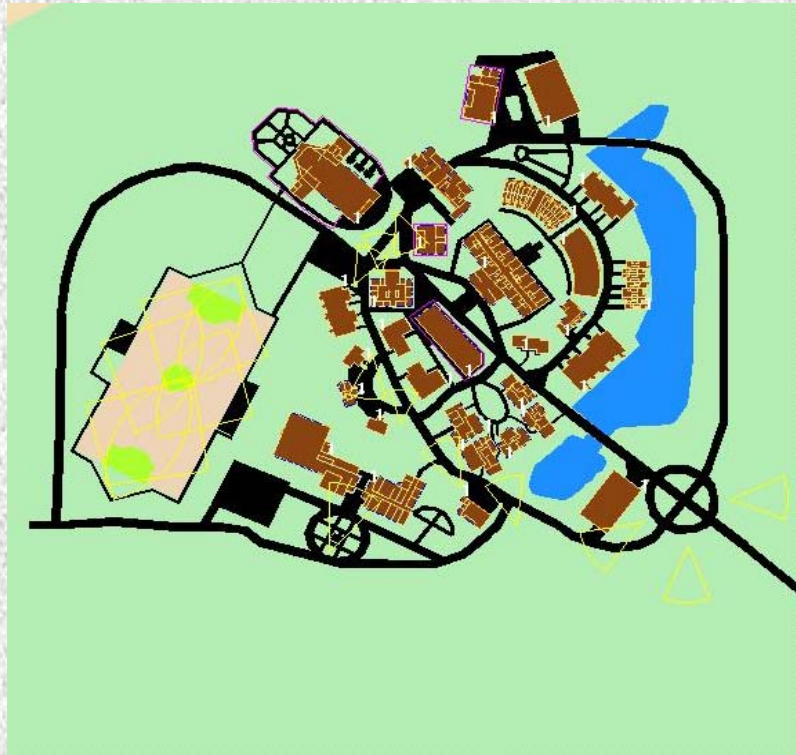
**DoD catalyst in focusing multiple contributing technologies to meet the Asymmetric Warfare customer's demands.**





# Military Operations in Urban Terrain

## JCATS – LASER Project



**Linking Joint Conflict and Tactical Simulation (JCATS) and 3D Laser**

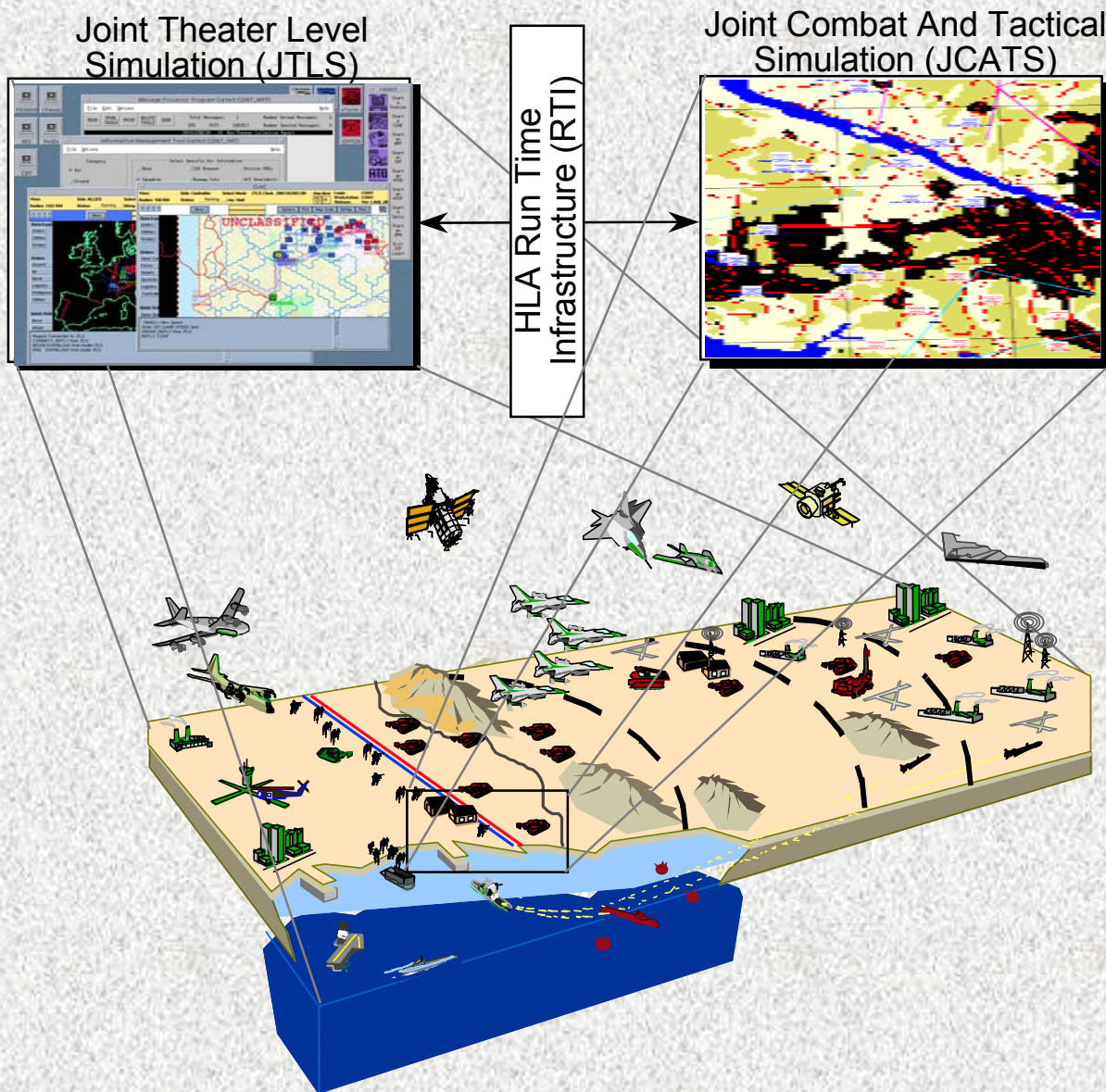
**Facilitating Training in Urban and High Risk Environment  
(Conventional and Asymmetric Application)**

**Course of Action and Mission Rehearsal Tools**





# JTLS-JCATS Federation



## Purpose:

- Establish a federation that involves both JTLS and JCATS in order to support aggregate and entity training requirements simultaneously
- Identified JFCOM high priority need

## Partners:

- JFCOM (JWFC)
- Roland and Associates (JTLS)
- LLNL (JCATS)

## Highlights:

- Will provide a capability for joint staffs to exercise using a theater-wide perspective (JTLS) and a tactical perspective (JCATS) in the same exercise
- Providing insight into M&S issues surrounding aggregation-deaggregation of units

## Status:

- Federation design to be completed by end of FY01
- Prototype capability to be completed by end of FY02





# C4ISR - SIM



- Description:
  - Implement standards for interoperability between C4I systems and simulations across DoD
  - Foster improvements in interoperability between C4I systems and simulations, especially in those areas where current capability is limited
  - Coordinate and participate with other DoD organizations involved in the application of M&S and C4ISR.
- Initiatives:
  - DII COE M&S TWG: Identifies M&S requirements for COE components and works to implement those components
  - GCCS-NSS: Provides a capability to initialize the Naval Simulation System (NSS) directly from GCCS data, for performing course of action (COA) analyses during exercises and operations.
  - GCCS-ITEM: Leverages the current GCCS-NSS interface to allow the Integrated Theater Engagement Model (ITEM) to be initialized for COA and planning uses in the same way as NSS
- Customers:
  - PACOM, USFK, SPAWAR, NAVMSO, NWC, AMSO, SIMCI, DSA





# Summary



- Requirement for M&S continues to grow
  - Future warfighting concepts will drive new acquisition paradigms
  - Test and training will be significantly affected by these new paradigms
  - Modeling and simulation will play a key role in testing and training of future combat systems
- Advanced technologies (government & commercial) show promise for significant increases in M&S capabilities
  - Processing Power
  - Communications Networks
  - Human Immersion Technologies
  - Models
  - Algorithms
- Many challenges still exist and some require long-term sustained effort:
  - Scalable, High-fidelity Systems
  - Integrated Natural Environment
  - 4-D representations
  - Human Performance Representation
- DoD efforts must continue to address these challenging issues